What is claimed is:

1. An ultrasound catheter comprising:

an elongate flexible catheter body having a proximal end, a distal end, and a main lumen extending longitudinally therethrough;

an ultrasound transmission member extending longitudinally through the main lumen of the catheter body, the ultrasound transmission member having a distal end positioned at the distal end of the catheter body; and

a guidewire lumen extending longitudinally through a portion of the main lumen and terminating in a guidewire port that is closer to the proximal end of the catheter body than to the distal end of the catheter body.

2. The device of claim 1, further including a Y-connector connected to the proximal end of the catheter body, with the guidewire port positioned adjacent the Y-connector.

3. An ultrasound catheter comprising:

an elongate flexible catheter body having a proximal end, a distal end, and at least one lumen extending longitudinally therethrough;

a distal head positioned on the distal end of the catheter body, the distal head made from low-density material that is rigid and radio-dense; and

an ultrasound transmission member extending longitudinally through the at least one lumen of the catheter body, the ultrasound transmission member having a distal end connected to the distal head.

4. The catheter of claim 3, wherein the material of the distal head is a Titanium alloy.

5. The catheter of claim 3, wherein the material of the distal head is a Magnesium alloy.

6. The catheter of claim 3, wherein the material of the distal head is selected from the group consisting of ABS, Polycarbonate, Polyphenylene Oxide, Polyarylate, Polysulfone, and any alloys thereof.

7. The catheter of claim 3, wherein the material of the distal head has an average density that is less than 5 g/cm^3.

8. The catheter of claim 3, wherein the total mass of the distal head is less than 0.015 grams.

9. The catheter of claim 3, wherein the material of the distal head is an Aluminum alloy.

10. An ultrasound catheter comprising:

an elongate flexible catheter body having a proximal end, a distal end, and a main lumen extending longitudinally therethrough;

an ultrasound transmission member extending longitudinally through the main lumen of the catheter body, the ultrasound transmission member having a distal end positioned at the distal end of the catheter body; and

a guidewire lumen extending longitudinally through a portion of the main lumen and positioned at about the center of the main lumen.

11. The catheter of claim 10, wherein the guidewire lumen terminates in a guidewire port that is adjacent the proximal end of the catheter body.

12. The catheter of claim 10, wherein the guidewire lumen is defined by a guidewire tube that is affixed to the distal head.

13. The catheter of claim 12, wherein the guidewire lumen is positioned at about the center of the distal head.

14. An ultrasound catheter comprising:

an elongate flexible catheter body having a proximal end, a distal head, and a main lumen extending longitudinally therethrough, the distal head having a bore with a proximal section and a distal section that has an inner diameter that is smaller than the inner diameter of the proximal section of the bore;

an ultrasound transmission member extending longitudinally through the main lumen of the catheter body, the ultrasound transmission member having a proximal

end and a distal end positioned at the distal head of the catheter body; and

a guidewire lumen extending longitudinally through a portion of the main lumen, and into the proximal section of the bore of the distal head, the guidewire lumen terminating before the distal section of the bore of the distal head.

15. The catheter of claim 14, wherein the guidewire lumen is defined by a guidewire tube that is affixed to the distal head.

16. The catheter of claim 14, wherein the guidewire lumen has a proximal end and a distal end, and wherein the proximal end of the guidewire lumen terminates adjacent the proximal end of the catheter body and is affixed to the catheter body.

17. The catheter of claim 14, wherein the guidewire lumen has a proximal end and a distal end, and wherein the proximal end of the guidewire lumen terminates adjacent the distal end of the catheter body and is affixed to the catheter body.

18. A method of removing particles from a blood vessel, comprising:

percutaneously introducing an ultrasound catheter into the blood vessel, the catheter having a proximal end, a distal tip, a lumen extending longitudinally therethrough, and an ultrasound transmission member extending longitudinally through the lumen;

positioning the distal tip of the catheter at a desired treatment location in the blood vessel;

introducing a flow of fluid along the outside of the catheter to the desired treatment location;

initiating ultrasound ablation at the desired treatment location which results in the generation of tissue particles; and

carrying the tissue particles with the fluid through the lumen of the catheter from the distal tip to the proximal end to be removed outside the blood vessel, and to simultaneously cool the ultrasound transmission member.

19. A method of locally imaging a treatment location during a medical procedure, comprising:

a. percutaneously introducing an ultrasound catheter into the blood vessel, the catheter having a proximal end, a distal tip, a lumen extending longitudinally therethrough, and an ultrasound transmission member extending longitudinally through the lumen;

b. positioning the distal tip of the catheter at a desired treatment location in the blood vessel that has a lesion;

c. initiating ultrasound ablation at the desired treatment location;

d. injecting contrast media through the lumen of the catheter and out of the distal tip thereof.

20. The method of claim 19, wherein step (d) is performed at all times during steps (b) and (c).

21. The method of claim 20, wherein step (d) is performed after ultrasound ablation in step (c) is completed.

22. The method of claim 19, further including:

g. repeating steps (c) and (d) until the distal tip of the catheter has successfully facilitated guide wire advancement completely across the lesion.

23. A method of shaping the distal end of a catheter, comprising:

maintaining the distal end of the catheter in a bent configuration over a heat source for a period of time; and

cooling the distal end.

24. The method of claim 23, wherein the cooling step comprises cooling at or below room temperature.

25. The method of claim 23, wherein the cooling step comprises quenching the distal end in a bath of saline.

26. The method of claim 23, further including:

providing the catheter in a material whose heat distortion temperature is less than or equal to 100 degrees Celcius.

27. The method of claim 23, further including:

placing a ductile wire in the distal end of the catheter prior to maintaining the distal end of the catheter in a bent configuration over a heat source for a period of time.

28. The method of claim 23, wherein the heat source is a steam source.

29. An ultrasound catheter comprising:

an elongate flexible catheter body having a proximal end, a distal end, and at least one lumen extending longitudinally therethrough;

an ultrasound transmission member extending longitudinally through the at least one lumen of the catheter body, the ultrasound transmission member having a proximal end and a distal end positioned at the distal end of the catheter body; and

a sonic connector positioned at the proximal end of the catheter body for connecting the proximal end of the ultrasound transmission member to an ultrasound generating device at a location where there is maximum longitudinal displacement of the ultrasound generating device.

30. The catheter of claim 29, further including a catheter knob having a bore which surrounds the sonic connector and a portion of the ultrasound transmission member.

31. The catheter of claim 30, further including an absorber retained inside the bore of the catheter knob.

32. The catheter of claim 30, wherein the sonic connector comprises a proximal section for connection to the ultrasound generating device, and a front portion defining the bore which receives the proximal end of the ultrasound transmission member.

33. The catheter of claim 31, wherein the absorber includes a plurality of O-rings.

34. The catheter of claim 31, wherein the absorber includes at least two different absorbers positioned adjacent to each other.

35. The catheter of claim 31, wherein the absorber includes a first absorber and a second absorber, with the first absorber spaced apart from the second absorber.

36. An ultrasound catheter comprising:

an elongate flexible catheter body having a proximal end, a distal end, and at least one lumen extending longitudinally therethrough;

an ultrasound transmission member extending longitudinally through the at least one lumen of the catheter body, the ultrasound transmission member having a proximal end attached to sonic connector, and a distal end attached to the distal end of the catheter body; and

a sonic connector for connecting the ultrasound transmission member to an ultrasound generating device, the sonic connector having:

a distal bore to which the ultrasound transmission member is attached;

a central portion having a flat proximal face;

a threaded portion extending and spaced-apart from the flat proximal face, the threaded portion attached to the ultrasound generating device.

37. The catheter of claim 36, further including a space between the threaded portion and the flat proximal face, with the face being free of any threads.

38. A connector for connecting an ultrasound transducer to an ultrasound catheter, comprising:

a catheter knob;

an ultrasound transducer having a transducer housing, the transducer housing having a catheter coupling that includes a sleeve;

an annular collar coupled to the transducer housing and the sleeve for supporting a connection between the transducer and the catheter knob, wherein the collar is slideably movable between:

(i) a first non-supporting position wherein the collar is not positioned around the sleeve, and

(ii) a second supporting position, wherein the collar is positioned around a portion of the sleeve.

39. The connector of claim 38, wherein the collar has a tapered inner bore that is configured relative to the sleeve such that the collar will exert an increasingly stronger grip on the sleeve when moved from the first position to the second position.

40. The connector of claim 38, wherein the collar has a countersink formed therein to facilitate movement from the first position to the second position.

41. The connector of claim 38, wherein the sleeve has an open ended slot.

42. The connector of claim 38, wherein the sleeve has a close ended slot.

43. The connector of claim 38, wherein the sleeve has a plurality of open ended and close ended slots.

44. The connector of claim 38, wherein the sleeve is affixed to the transducer housing.

45. The catheter of claim 38, wherein the collar overlaps the catheter knob when the catheter is coupled to the transducer housing.

46. A method of cooling the ultrasound transmission member during a medical procedure, comprising:

a. percutaneously introducing an ultrasound catheter into the blood vessel, the catheter having a proximal end, a distal tip, a lumen extending longitudinally therethrough, and an ultrasound transmission member extending longitudinally through the lumen;

b. positioning the distal tip of the catheter at a desired treatment location in the blood vessel that has a lesion;

c. initiating irrigation flow of a coolant through the lumen of the catheter;

d. initiating ultrasound ablation at the desired treatment location;

e. maintaining irrigation flow rate and pressure so that the temperature of the coolant at the distal tip does not exceed 50 degrees Celsius.

47. A method of cooling the ultrasound transmission member during a medical procedure, comprising:

a. percutaneously introducing an ultrasound catheter into the blood vessel, the catheter having a proximal end, a distal tip, a lumen extending longitudinally therethrough, and an ultrasound transmission member extending longitudinally through the lumen;

b. positioning the distal tip of the catheter at a desired treatment location in the blood vessel that has a lesion;

c initiating negative pressure to facilitate irrigation flow of a coolant through the lumen of the catheter from outside of the distal tip adjacent the lesion to a location outside and proximal of the catheter;

e. maintaining irrigation flow rate and negative pressure so that the temperature of the coolant at the distal tip will not exceed 50 degrees Celsius.